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ABSTRACT

Among the latest developments making a significant impact on the educational scene worldwide are generic competencies. In Australia, the Karmel committee (1985) produced a set of general competencies and also used the term "key competence." The Finn committee next developed the idea of employment-related key competencies in its report "Young People's Participation in Post-Compulsory Education and Training" (1991). Its next task was to support a consistent standards framework for the competencies describing different levels of achievement against which progress could be assessed and reported. In 1991, the Mayer committee was established to develop the concept of employment-related key competencies. Through consultations, industry representatives suggested additional skills and competencies, the most striking of which was the attribute of "having the right attitude." The Mayer committee then established three performance levels that related specifically to the key competencies. The three performance levels derived were: Level 1 describes the competence needed to undertake activities efficiently and with sufficient self-management to meet the explicit requirements of the activity; level 2 describes the competence needed to manage activities requiring the selection, application and integration of a number of elements; and level 3 describes the competence needed to evaluate and reshape process, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcomes. In New Zealand, the Committee of Inquiry into Curriculum, Assessment, and Qualifications in Forms 5 to 7 proposed eight areas of knowledge and skills. In 1991, the Ministry of Education proposed eight essential skills. The New Zealand Qualifications Authority suggested incorporating the essential skills into the National Qualifications Framework, which has eight levels of progression. In comparing Australian key competencies to other overseas lists of generic skills including those of New Zealand, the Mayer committee found that each Australian key competency was duplicated in the New Zealand essential skills and vice versa. Overseas developments of core skills for England and Wales, Scotland, United States, Canada, and Germany are discussed. (Contains 31 references.) (YLB)

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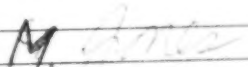
The development of generic competencies in Australia and New Zealand

MARK C WERNER

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The development of
generic competencies
in Australia and
New Zealand

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Introduction

Amongst the latest developments beginning to make a significant impact on the educational scene worldwide are 'generic competencies'. In Australia they are being developed as the Mayer 'employment-related key competencies', whilst in New Zealand they are referred to as 'essential skills'. This paper investigates what prompted the adoption of what are considered to be the key competencies and essential skills. In addition it investigates the information and processes used to arrive at their definitions. The development of generic competencies in other overseas countries is also considered.

Differences in the definition of generic competencies occur between countries, resulting in different lists of what are considered to be generic competencies. One of the main characteristics of generic competencies which is treated differently between countries is transferability, that is, whether or not a generic competency taught and learned in one context or environment automatically transfers to another context or environment. The introduction of generic competencies in curricula also poses new problems in relation to assessment procedures and relationships to existing educational standards frameworks. Each of these issues is discussed in the following report.

Australian and New Zealand definitions

Generic competencies: What are they?

A number of names have been used in reference to generic competencies including 'key competencies' in Australia, 'essential skills' in New Zealand, 'foundation skills' or 'workplace competencies' in the United States, and 'core skills' in England and Scotland. The terms 'transferable skills', 'transition skills', 'enabling skills', 'basic skills' and 'core competencies' have also been used in reference to generic skills.

What definitions there are of 'competence' usually differ and are not specific, even more so with respect to 'generic competencies'. In general, 'competence' may be defined as the ability to perform specified tasks and possessing the relevant knowledge and understanding. Thus it follows that 'generic competencies' are those competencies generic or general in the sense that they underpin the acquisition of specific competencies. Some go further and require that competencies also be transferable between situations or contexts in order to be considered generic.

Until there is a common meaning and understanding of each of these terms, the implementation of policies involving the development and use of generic competencies will be hindered.

Generic competencies in Australia and New Zealand

AUSTRALIA

Finn committee

One of the first committees in Australia to develop the idea of generic competencies was the Finn committee. The committee '... adopted a broad definition of 'competence' in line with that of the NTB [National Training Board]' (Finn 1991, p.57). In turn, the NTB (1992) defined a competency as comprising:

... the specification of knowledge and skill and the application of that knowledge and skill within an occupation or industry level, to the standard of performance required in employment. The concept of competency focusses on what is expected of an employee in the workplace rather than on the learning process; and embodies the ability to transfer and apply skills and knowledge to new situations and environments. (p.29)

The NTB considered this concept of competency a broad one in that all aspects of work performance are included, not only narrow task skills. For example, the requirement to manage a number of different specific tasks and to be able to respond to irregularities and breakdowns in routine were seen as ingredients of competency.

In his search for the Finn committee's definition of 'competence', Speedy (1992) stated that:

The broad definition referred to [in the Finn report] is never made explicit but it is presumed to include:

- *the ability to perform specified tasks;*
- *relevant knowledge and understanding; and*
- *the ability to transfer skills and knowledge to new situations.*

Competence as defined by the NTB was for use within an employment/performance context. This being the case, Speedy (1992) points out that if the Finn report definition follows the NTB model, then the following questions are raised:

- How is 'the ability to perform specified tasks' to be related to pre-employment (employability) rather than specific employment which is the original referent?
- How are knowledge and understanding to be defined and assessed in relation to the 'specified tasks'? (p.40)

Although the Finn committee adopted the term 'key competencies', the definition of same was left as a responsibility for the Mayer committee.

Mayer committee

The Mayer committee was set up expressly to develop the idea of employment-related key competencies recommended in the Finn report. Following in the shadow of the Finn committee, the Mayer committee also adopted a broad definition of competence that was 'consistent with the definition adopted by the NTB'. The Mayer committee (Mayer 1992a) stated that:

The committee adopted a broad definition of competence which recognises that performance is underpinned not only by skill but also by knowledge and understanding, and that competence involves both the ability to perform in a given context and the capacity to transfer knowledge and skills to new tasks and situations. (p.7)

The Mayer committee's explicit 'definition' of key competencies follows:

Key competencies are competencies essential for effective participation in the emerging patterns of work and work organisation. They focus on the capacity to apply knowledge and skills in an integrated way in work situations. Key competencies are generic in that they apply to work generally rather than being specific to work in particular occupations or industries. This

characteristic means that the key competencies are not only essential for effective participation in work but are also essential for effective participation in further education and in adult life more generally.

(Mayer 1992a, p.7).

Later in its report, the Mayer committee imposed further restrictions on what could be considered a key competency by maintaining the view that:

... a set of key competencies can only contain those things which can be developed by education and training, which do not require some innate predisposition or adherence to a particular set of values and which are amenable to credible assessment.

(Mayer 1992a, p.13)

Thus, from the Mayer committee's explicit requirements for key competencies and the implicit requirements imposed due to their 'definition' of competence, key competencies must:

- be essential for effective participation in employment, further education, and adult life more generally;
- focus on the capacity to apply knowledge and skills in an integrated way in work situations;
- apply to work generally rather than being specific to work in particular occupations;
- only contain those things which can be developed by education and training;
- not require some innate predisposition or adherence to a particular set of values;
- be amenable to credible assessment;
- be transferable to new tasks and situations.

As the interpretation of at least one of these requirements is non-specific and open, it follows that key competencies have still not been rigidly defined. For example, how is 'effective participation' to be defined, when is a competence 'essential', and how is one to determine if a competence is 'amenable to credible assessment'? Depending on how these requirements are defined, the list of key competencies could vary dramatically.

Transferability

One of the more complex requirements for a key competency is that it be transferable to new tasks, situations or environments. What is not made clear by either the NTB or the Mayer committee, is whether or not competency is to be considered context or domain bound. For example, consider a student who understands the principles and workings of the human heart as a pump. For the student to be considered competent in this understanding, must he or she be able to transfer this understanding to enable understanding of the principles and workings of a mechanical pump (this being another context or domain), or need the student only have to transfer this understanding in order to understand the principals and workings of other mammals' hearts as a pump (this being within the same context or domain)?

In '... seeking to reflect the notion of transferability' the Mayer committee required that:

Achievement of a given performance level should be based on assessment at that level in at least two different contexts.

(Mayer 1992a, p.46)

and stated that 'different contexts might be defined as different subjects or physical settings'. However, the committee preferred not to give a firm definition of difference in context (Mayer 1992a, p.46).

Although the indications are that the Mayer committee at least desired the key competencies to be transferable across contexts, it was aware of research findings that suggest:

... learning is bound by context and that, when presented with a fundamentally similar but unfamiliar situation, learners are often unable to recognise the similarities in order to call up the necessary knowledge and skills to succeed.

(Mayer 1992c, p.10)

Transferability was nevertheless still considered 'perhaps the most essential attribute of competence' (Mayer 1992c, p.10).

Much caution needs to be exercised by those developing or implementing policies that assume the key competencies will automatically transfer to new contexts and situations as research increasingly shows otherwise. If transferability across contexts is to be kept a required feature of key competencies, then what was originally considered to be the list of key competencies may have to be shortened considerably.

NEW ZEALAND

Definition of essential skills

The term 'essential skills' as used in New Zealand, can be considered the parallel to the Australian term 'key competencies'. 'Essential skills' were defined by the New Zealand Qualifications Authority as:

... those identified by the Ministry of Education in the New Zealand Curriculum Framework as fundamental for learners in achieving their full potential and participation in society. They may be developed in different ways and learning environments, but are transferable to new situations.

(NZQA 1993b, p.4)

Unlike most other definitions, this one differs in that it consists of a list of essential skills rather than a number of conditions to be satisfied. However, vagueness of definition occurs with respect to the interpretation of 'may be developed in different ways', 'learning environments', and 'transferable to new situations'.

The requirement that essential skills may be developed in different ways and learning environments appears to refer to the following statement and example:

Essential and generic skills can be acquired in different contexts.

Communications skills can be developed in a sports team, in a formal debate, in a class or group exercise, as part of a school field trip, on the marae, or through participating in a discussion group on improving product quality. (NZQA 1993b, p.7)

The term 'essential skills' was used as it described:

... the two key elements of essential, in that all individuals should be developing the skills, and skill, as distinct from knowledge or understanding.

(NZQA 1993b, p.6)

Transferability

'A key issue in implementing essential skills ... is the degree to which skills transfer from one situation to another' (NZQA 1993b, pp.13-14). Although essential skills were defined to be transferable to new situations, later in the same document, this requirement was relaxed to 'essential and generic skills are more likely to be transferable' (NZQA 1993b, p.7). This also contrasts with the statement that 'essential skills are transferable' in an earlier discussion document (NZQA 1993a, p.5).

This more cautious approach has come about due to the realisation that:

Some research suggests that any skill transfer is limited, and unlikely to occur without teaching the application of the skill in multiple contexts and situations over an extended period of time.

(NZQA, 1993b, p.14)

It was further stated that:

Without a great deal more research, it will be difficult to know the best delivery approach to take in maximising skill transfer. ... It is worthwhile encouraging the development of essential skills and generic skills in more than one context in order to heighten the likelihood of transfer to new situations.

(NZQA 1993b, p.14)

These later statements imply that transferability was not intended to be a rigorous definitional requirement of essential skills, rather, that the transferability of essential skills be maximised by teaching methodologies.

Whether or not an essential skill is to be context bound or context free will depend on the individual skill:

Some of the essential skills . . . can be developed in stand-alone contexts. For example driving skills can be developed in a separate programme, and these skills will readily transfer to different vehicles and different environments. Communication skills . . . can be developed as a separate programme to be employed in a range of contexts.

With other skills, for example, problem solving, . . . it is unlikely that teaching and learning could be undertaken without familiar contexts that present considerable cognitive challenges. . . . The development of problem-solving skills would have to be closely integrated with other unit standards in a particular learning domain.

(NZQA 1993b, p.13)

Development of key competencies in Australia

It is often thought that the idea of employment-related key competencies in Australia was first conceived by the Finn committee (Finn, 1991) and passed on to the Mayer committee (Mayer, 1992) for development. Neither of these committees, nor most of the literature concerned with the development of key competencies in Australia, acknowledge the work of the Quality of Education Review Committee, otherwise known as the Karmel committee (Karmel 1985), which produced a set of 'general competencies' and also used the term 'key competence'.

Karmel committee

The Karmel committee was established in 1984 to develop strategies for raising the standards attained by students in communication, literacy and numeracy in primary and secondary education and for improving the relationship between secondary schooling and subsequent employment and education. In developing these strategies, the committee relied largely on consultations with education and labour market authorities, on previously published reports, papers and data and on material presented to it.

As a result of the committee's work, one of its recommendations was that funding be provided to government and non-government schools for:

- improving among students in primary, and particularly junior primary, schools, the development of the general competencies of:
 - acquiring information;
 - conveying information;
 - applying logical processes;
 - performing practical tasks as individuals; and
 - performing practical tasks as members of a group.
 (Karmel, p.201)

In the descriptions of these five general competencies, many thoughts remarkably similar to those expressed in the Mayer committee's discussion of key competencies are expressed. In describing the 'acquiring information' competency, it was stated that:

5.10 These skills, and others like them, are not the preserve of any particular subject discipline; their acquisition should be possible through many different subject areas, both academic and practical.

... They are required at higher levels for successful study at universities and colleges of advanced education, but they are equally necessary for functioning in employment and in society generally.
(p.70)

Finn committee

Background

The Finn committee next developed the idea of 'employment-related key competencies' in its report *Young people's participation in post-compulsory education and training* (Finn 1991). The formation of this committee in 1991 by the Australian Education Council (AEC) was prompted by a number of factors including:

- vastly increased retention rates to Year 12
- record levels of participation in TAFE vocational courses
- record apprenticeship intakes
- the 'convergence' of curricula in senior secondary schools and TAFE.

In developing the idea of key competencies, the committee was influenced by overseas educational and training structures. Australia has traditionally delivered 'vocational' and 'general' education separately, with schools providing the general education whilst vocational education and training has been provided by 'technical' schools, TAFE, private colleges and employers. Quite a different approach is taken overseas as pointed out to the committee in a submission from the Dusseldorp Skills Forum which highlighted the fact that in many countries there has been expressed:

... a need for the competencies required by workers in their roles as citizens to merge more closely with the competencies that they require in the workplace ... the argument is for a convergence of vocational and general education to meet both individual needs and industry needs.

(Finn 1991, p.6)

The Finn committee was of the opinion that individual and industry needs in Australia were also leading to a convergence of general and vocational education and thus subsequently adopted an approach similar to that overseas.

Development of the key areas of competence

In identifying the key areas of competence, the Finn committee explicitly limited its task to the '... areas related to a young person's initial and lifelong employability' (p.54) although it was of the opinion that:

... once it had identified what it regarded as essential competencies for the world of work, it had also incorporated many of the attributes required for individual well-being and for citizenship.

(Finn 1991, p.55)

In arriving at the final list of key areas of competence, the committee drew on its own expertise, similar lists in the literature, submissions to the committee and consultation with experts in the school, training and adult literacy areas.

Although the committee gave a listing of the eighty two submissions given to it, no explicit reference was made as to which submissions or consultations most influenced the committee's development of the key areas of competency. Thus it is not clear what emphasis was placed on input from employers, teachers, government departments or educational researchers. A need to consult more widely than what time had allowed the committee was admitted.

The key areas of competence

As a result of its work the committee recommended that:

The AEC and MOVEET endorse the following key areas of competence as essential for all young people engaged in post-compulsory education and training.

- *Language and Communication*
- *Mathematics*
- *Scientific and Technological Understandings*
- *Cultural Understanding*
- *Problem Solving*
- *Personal and Interpersonal.*

(Finn 1991, pp.57-58)

Comparisons with other lists and omissions

The competencies identified were mirrored in two overseas projects acknowledged by Finn, namely, the American Secretary's Commission on Achieving Necessary Skills (SCANS) interim report *America 2000: What work requires of schools*, and the National Council for Vocational Qualifications (NCVQ) work in the United Kingdom on 'core skills'. The development of generic skills by both of these organisations will be covered later in this paper.

Although the committee considered including knowledge of a language other than English (LOTE) as a key competency, it decided not to on the grounds that a LOTE is (not yet) an essential employment-related skill for all young Australians. In other words, it is possible to function in the Australian workplace without knowledge of a LOTE.

Standards framework

Having identified the key areas of competence, the Finn committee's next task was to suggest a consistent standards framework for the competencies describing different levels of achievement against which progress could be assessed and reported. This framework also had to apply to both the school and training sectors.

Each area of competence is made up of a number of component strands, for example, the key area of competence 'language and communication' consists of the strands speaking, listening, reading, and so on. The committee proposed that each strand be constructed into a 'profile', that is, comprising four levels of achievement (figure 1).

Figure 1: Key area of competence—Profile

Level	Strand 1	Strand 2	Strand 3
4			*
3	*		
2			
1		*	

* Possible profile of individual student achievement across different strands of one Key Area of Competence. (Finn 1991, p. 60).

The committee rejected the approach of defining only a minimum standard in the key competencies for all young people to attain by the end of their compulsory schooling on the grounds that this would not provide appropriate benchmarks for students achieving above the minimum standard, neither would it provide any stimulus for students to strive for higher achievement. The committee was also concerned that if only a minimum standard was set, then teachers and students would slip into a complacent approach and only fulfil the minimum requirements thus possibly depressing standards overall.

The committee considered directly linking the key competency profiles with the levels in the NTB's Australian Standards Framework (ASF) which was released in January 1991. This possibility was rejected on the grounds that the description of the ASF Level 1 was not appropriate for the key competencies level 1 and that the ASF levels were too difficult to link to the wide range of achievements found in the Year 11 to 12 school years.

On the topic of assessment of the key competencies, the committee left this as '... a matter for individual States and Territories to decide' but stated that the forms of assessment must '... be nationally comparable.'

Mayer committee

Background

In 1991, the Australian Education Council (AEC) and Ministers of Vocational Education, Employment and Training (MOVEET) established the Mayer committee for the sole purpose of developing the concept of employment-related key competencies proposed by

the Finn committee. More specifically, the tasks of the Mayer committee included identifying the key competencies (as opposed to areas of key competence as identified by the Finn committee), and developing a means of describing them that would:

... provide a common reference point for curriculum and teaching in both the school and training sectors and provide the basis for a consistent approach to assessing and reporting achievement.

(Mayer 1992b, p.vii)

Development of the key competencies

The resulting recommendations of the committee were based on the committee's own expertise; results of consultations, discussions and submissions; input through the Preliminary Industry Validation studies; and overseas developments in the United States, United Kingdom and New Zealand.

To help structure the use of all this advice and information obtained, the committee developed a number of principles upon which the final definition of the set of key competencies would be based. They were:

- *Part of general education, but not the whole:* Key competencies are essential elements of a general education but do not displace the broader purposes of general education in developing young people as individuals and members of Australian Society.
- *Essential and generic to work in the future:* The set of key competencies should be confined to those capabilities that are essential for young people entering any sector of work in the future, including both unpaid and volunteer work.
- *Of value to all young people regardless of post compulsory pathway:* The set of key competencies has value for all young people regardless of the pathway they follow in the post-compulsory years.
- *Cross-curricular:* The set of key competencies does not constitute a curriculum or set of subjects, nor do individual key competencies relate only to particular subject areas. Rather, the key competencies can be developed and applied across the range of areas of learning comprising the curricula of school and training programs.
- *Able to be developed in a wide range of settings:* The set of key competencies can be taught and learned through the variety of education and training settings and programs currently available to young people in Australia.
- *Focus on outcomes:* The key competencies describe outcomes of learning rather than processes by which these outcomes may be achieved.
- *Assume a foundation of knowledge, skills and understanding:* The key competencies assume a basis of knowledge, skills and understanding which need to be integrated and applied to achieve a purpose or complete a task.

- *Focus on application:* Central to the concept of competence is the application of knowledge, skills and understanding in an integrated way; competencies do not constitute bodies of knowledge as such.
- *Integrated in practice:* The integrated nature of the key competencies and the ways in which they are applied to work activities means that, in practice, they overlap with each other to some extent. (Mayer 1992a, p.9)

In addition to these principles, the committee also considered the practical consequences for curriculum, teaching, assessment and reporting. This resulted in emphasis from all those consulted to keep the number of things to be assessed and reported in the key competencies to a minimum. Other characteristics strongly supported by consultation were that the key competencies must:

- be essential for preparation for employment;
- be generic to the kinds of work and work organisation emerging in the range of occupations at entry levels within industry rather than occupation- or industry-specific;
- equip individuals to participate effectively in a wide range of social settings, including workplaces and adult life more generally;
- involve integration and application of knowledge and skills;
- be able to be learned;
- be amenable to credible assessment.

(Mayer 1992a, p.12 & 1992b, p.8)

During the development of the key competencies, the Mayer committee stated that it would:

... become possible to identify foundation knowledge, skills and understanding which inform and underpin the set of key competency strands.

(Mayer 1992d, p.11)

This foundation knowledge, which would be assumed by the key competencies, includes, for example, the capacity to read, write and say whole numbers and interpret analogue and digital clocks.

The key competencies

Having taken into consideration all these factors, the committee reached a final list of key competencies much reduced from its initial proposal:

- Collecting, Analysing and Organising Information
- Communicating Ideas and Information
- Planning and Organising Activities
- Working with Others and in Teams
- Using Mathematical Ideas and Techniques
- Solving Problems
- Using Technology

(Mayer 1992a, p.5)

Other possibilities

Through consultations, a number of other items were suggested for incorporation in the key competencies.

The arts, family and household management, and cultural understanding were suggested. However, the committee did not develop these as key competencies in their own right as the committee believed that they did not satisfy the criteria set out in the defining characteristics of key competencies. Nevertheless, the committee claimed that these areas had been incorporated into the list of seven key competencies finally arrived at above.

These claims do not always appear to hold up. For example, although the key competency 'communicating ideas and information' partly incorporates the arts, nowhere is creativity, an essential requirement for competence in the arts, to be found in the key competencies.

With regard to the inclusion of languages other than English as a key competency, the Mayer committee adopted an identical approach to that of the Finn committee, namely, that as a LOTE was not generic to all industries and occupations (and thus did not comply with the definition of key competencies), it was not included in the set. However, as did the Finn committee, the Mayer committee also indicated that a LOTE may, in the future, warrant inclusion in the list of key competencies.

A number of attempts were made to define cultural understanding as a key competency in its own right, however, the committee was of the opinion that a description of cultural understanding could not be formed to satisfy the definitional requirements of a key competency. It was suggested that cultural understanding might more appropriately be defined by the ways in which it underpins all of the key competencies rather than as a key competency in its own right.

Attitude

As part of the second period of consultation, the committee undertook preliminary industry validation studies in several industries across four states to ascertain the appropriateness of the proposed key competencies for industry. Through these consultations, industry representatives suggested additional skills and competencies.

The most striking of these, which emerged strongly in every interview and discussion, is the attribute of 'having the right attitude'. This was described in many ways; for example:

- having a positive attitude
- being willing to learn
- having a capacity to follow instructions
- having common sense
- being able to take personal responsibility/self-management
- being able to do things from day one

(Mayer 1992a, p.89)

In New South Wales, a workshop comprising representatives from the building and construction industry was held to investigate if 'attitude' could be discerned in the key competencies. Employees having the right attitude were defined as those having:

... the self-confidence to perform tasks within a reasonable time, to display initiative, and to ask questions when necessary. They have the ability to think through the task ahead, and to foresee consequences of their actions.

(Mayer 1992a, p.89)

This workshop concluded that 'attitude' was implicit in all the key competencies.

This view was not supported by findings from Victoria which contradicted the notion that attitudinal attributes were encompassed in the key competencies. Victorian responses indicated that an additional key competency needed to be formed to address attitude. (Mayer 1992a, p.90).

However, as the committee later added the requirements that key competencies be able to be developed by education and training, not require some innate predisposition or adherence to a particular set of values, and be amenable to credible assessment, it deemed that attitudes and values fell outside the set of key competencies. Nevertheless, the committee did view attitudes and values as being a function of particular workplace settings which would be reflected in the application of key competencies. For example, the *Key competency working with others and in teams* includes contributing to the good of the group or organisation and being ethical in one's dealings with others.

**Other
suggestions
from the
preliminary
industry
validation
study**

Other key competencies suggested through the preliminary industry validation study were:

- Motor Skills/Dexterity
- Creativity
- Cultural Awareness
- Understanding the Culture of Organisations
- Ability to Manage Stress
- Personal Presentation
- Health/Physical Fitness
- Morality and Ethics
- Customer Orientation
- Self Organisation/Discipline
- Two-way Communication Skills
- Customer/Client Satisfaction.

(Mayer 1992a, p.90)

The committee did not state in its report whether it thought these suggestions were worthy for consideration for addition into the list of key competencies or whether it considered them to be already

incorporated in the list of seven key competencies already proposed.

Comparisons with overseas lists

Although the Mayer committee referred to lists of generic competencies from overseas developments in the United Kingdom and the United States in arriving at its own list of key competencies, the committee found that its set of key competencies '... bears marked similarities to developments in other countries.' In addition, the Mayer committee also referred to the development of 'essential skills' in New Zealand.

The Mayer committee deduced that, as its list of key competencies virtually mirrored lists of generic skills identified in other countries, its list was accurate. Provided that the Mayer committee list was arrived at independently, the resulting similarity is intuitive evidence of its validity.

Levels of performance

Having arrived at a 'final' list of key competencies, it was now the Mayer committee's turn to tackle the establishment of levels of achievement, assessment and reporting procedures. The committee developed three 'performance levels' which related specifically to the key competencies.

The Mayer committee re-traced the steps of the Finn committee in that it '... explored the possibilities of using levels from the Australian Standards Framework as primary reference points for the 'performance levels in the key competencies' (Mayer 1992a, p.16) but found them to be inappropriate. One of the main reasons for this is that the industry competency standards are described in terms of the requirements of jobs rather than the competencies an individual brings to the job.

The three performance levels derived were:

Performance level 1 describes the competence needed to undertake activities efficiently and with sufficient self-management to meet the explicit requirements of the activity and to make judgements about quality of outcome against established criteria.

Performance level 2 describes the competence needed to manage activities requiring the selection, application and integration of a number of elements, and to select from established criteria to judge quality of process and outcome.

Performance level 3 describes the competence needed to evaluate and reshape processes, to establish and use principles in order to determine appropriate ways of approaching activities, and to establish criteria for judging quality of process and outcome. (Mayer 1992a, p.18)

The committee accepted that further development and implementation experiences may require the addition of extra levels lower than performance level 1, higher than performance level 2, or within the proposed range.

Having established a set of seven key competencies and three performance levels, the committee produced descriptions of each of the key competencies and what abilities were required to be considered competent at each performance level (see Mayer 1992a, pp.20-41).

Assessment

In developing an assessment methodology for the key competencies, the Mayer committee focussed on the use of assessment as evidence of achievement to a potential employer or another education and training provider. It was recommended that assessment and reporting be nationally consistent and be assessed against nationally agreed performance levels. The committee included the following principles for assessment in its recommendations:

- Assessment should be undertaken as an holistic process which integrates knowledge and skills with their practical application.
- Achievement of a given performance level should be based on assessment at that level in at least two different contexts.
- To the maximum extent possible, assessment methods should ensure that students/trainees are not disadvantaged by gender, race, ethnicity, disability, socio-economic status or other social circumstance.
- Assessment procedures should provide for the recognition of key competencies, no matter how, where or when they have been acquired.
- Assessment procedures should be designed so that, as far as possible, assessments of the key competencies are undertaken as part of, or in conjunction with, assessments undertaken for other purposes. (Mayer 1992a, p.49)

Conclusions

The Mayer committee concluded by recommending that further work be conducted to further validate and establish benchmarks for the performance levels and that States and Territories field test the implementation of key competencies and their assessment.

The committee's report was received by the AEC and MOVEET in September 1992 who endorsed the definition and set of key competencies and agreed to the field testing.

General criticisms of the set of key competencies

A number of dissatisfactions with the proposed introduction of key competencies have been expressed. Many claim that significant omissions in the list of key competencies have occurred, principally, attitudes and values, cultural understanding, creativity, and languages other than English.

As discussed above, industry representatives through submissions and consultations argued strongly for the addition of attitudes and values as a key competency. The importance of attitude as a requirement of competence has been regularly stated in the literature. For example, Stasz et al. (1990, p.v) stated that if people are not motivated for work, their basic or complex skills will be wasted. The title of Kingsland and Cowdroy's (1993) paper *Competence without attitude is not competence* summarised their view that:

Particular sets of attitudes are essential to the effective application of professional competencies to satisfy employer expectations and societal needs. (p.201)

Others have argued that:

... the notion of key competencies spells doom for general education, the abandonment of knowledge and even a decline in standards of literacy and knowledge.

(Borthwick 1993, p.31)

More fundamentally, it has been argued that there is no specific need to introduce key competencies into the school curriculum as they are already there. Considering that there are many people effectively participating in work, further education and adult life more generally (and who therefore, by definition, must possess the key competencies) who have not been explicitly taught the key competencies in their education, the above argument deserves further consideration.

3

The development of essential skills in New Zealand

Background

The emphasis on development of essential skills in New Zealand has been prompted primarily from New Zealand's desire to achieve a better placing in the international economic arena and to ensure that:

... all young people gain the knowledge, skills, understanding, and attitudes which will enable them to contribute fully and effectively to New Zealand's future and the well-being of its society.

(Department of Education 1986, p.102)

To help New Zealand attain these goals, it was proposed that the school curriculum include:

... certain generic skills which are found across a range of subjects, such as study and research skills, practical and social skills, and especially those skills which help prepare students for the transition from school to adult and working life, or tertiary study.

(Department of Education 1986, p.84)

Committee of Inquiry into Curriculum, Assessment and Qualifications in Forms 5 to 7

In October 1985, the Department of Education's Committee of Inquiry into Curriculum, Assessment and Qualifications in Forms 5 to 7 sought submissions on the wider issues of curriculum, assessment and certification in forms 5 to 7 (Department of Education, 1986). Many of the submissions received referred to a broad range of general personal, social, and intellectual skills which are considered vital for young people moving into the adult world. In particular, many submissions stressed that schools have a major responsibility to prepare students for the world of work.

Instead of prescribing a list of compulsory subjects, the committee grouped what it considered should be learned under headings with the intention that students study something under each heading at some time during their secondary schooling. It was proposed that:

... eight areas of knowledge ... together with skills, attitudes and values which permeate all learning, form the foundation of the common curriculum of all students up to the end of form 5.

(Department of Education 1986, pp.46-47)

The areas of knowledge and skills proposed were:

- 1 Knowledge which helps students to understand and be confident in their own culture and in the culture of Aotearoa/New Zealand, and to be sensitive to that of others.
- 2 Knowledge which develops students' confidence and ability in language.
- 3 Knowledge which develops students' confidence and ability in mathematics.
- 4 Knowledge which develops students' understanding of the physical, biological, and technological world and how people interact with and influence their environment.
- 5 Knowledge which develops students' confidence and ability to express themselves creatively through artistic, practical, and physical activities, and to appreciate the creativity of others.
- 6 Knowledge which develops students' understanding of their own and others' growth.
- 7 Knowledge which develops students' understanding of how individuals and groups relate to each other and work together in social, political, and economic ways.
- 8 Knowledge which develops students' confidence in handling the day-to-day practicalities of their own lives.

In addition to the knowledge assumed in each of these areas, a range of skills which enable students to acquire and apply their knowledge form an integral part of the proposal of the committee ... These include skills such as those associated with problem solving, reasoning, study, research, organisation, and evaluation, and creative and expressive skills, interpersonal skills, and practical skills. (Department of Education 1986, pp.47-48)

This approach thus not only placed importance in the acquisition of skills *per se* but placed particular emphasis on the acquisition of certain areas of knowledge.

New Zealand Planning Council

In a paper released in January 1991, the New Zealand Planning Council (NZPC) identified two major industry groups that would dominate New Zealand's new economy, namely, the business services and finance sectors; and the wholesale trade, retail trade, restaurants and hotels sectors. The NZPC identified the generic skills required within these two industry groups as:

- Ability to continue learning/adapting throughout life
 - Communication/interpersonal skills
 - Information skills
 - Business/managerial skills
 - Technology/computer skills
 - Language skills
 - Thinking/creative/problem solving
 - Number skills.
- (NZPC 1991, p.15)

These skills were also identified as being increasingly needed in all areas of the economy.

Although many in New Zealand argued for improvement in specialist skills, particularly in emerging high technology, the NZPC (1991) stated that:

... for New Zealand as a whole to be successful in the new economy, everyone needs to lift their level of base generic skills ... Specialist skills ... need to be continually built on this base. (p.16)

The Ministry of Education's essential skills

In 1991, the Ministry of Education proposed a curriculum with a fundamental base consisting of seven essential learning areas, seven essential skills, and assessment methods (Ministry of Education, 1991). As a result of consultations, the list of essential skills was modified and increased to eight in number:

- Communication skills
 - Numeracy Skills
 - Information Skills
 - Problem-solving Skills
 - Self-management and Competitive Skills
 - Social and Co-operative Skills
 - Physical Skills
 - Work and Study Skills.
- (NZQA 1993b, pp.24-27)

The NZQA (1993) stated that:

The essential skills identified in the New Zealand Curriculum Framework are very similar to other lists developed overseas and by bodies such as the NZ Planning Council, the New Zealand Employers Federation and by teachers for the New Zealand Record of Achievement project. (p.9)

Implementation of the essential skills

The NZQA proposes to incorporate the essential skills into the National Qualifications Framework (NQF) currently being implemented which comprises eight levels of progression. It has been suggested that the essential skills will not all possess the same number of levels in the NQF. Some may only be represented at the first level whilst others would extend through the NQF.

There is still much discussion on how the essential skills could be recognised within the NQF. The four main models being considered are the 'separation', 'adjunct', 'integrated' and 'combination' models.

The 'separation model' proposes that separate assessment and reporting of the essential skills with no direct linkage to the NQF. For the 'adjunct model', essential skills would be developed into units at appropriate levels of the NQF and would be contextually free. As pointed out by the NZQA, the main disadvantages would be the difficulty in setting context-free standards and the risk that essential skill units would not be delivered in conjunction with relevant subject domain units. This latter point would also hinder the transferability of many essential skills.

The 'integrated model' proposes identification of elements (learning outcomes within a unit) within each of the skills areas. For example, the 'communication skills' essential skill comprises of the elements listening, reading and writing et cetera. Each element would be assigned to a NQF level. Instead of arranging these elements into units, developers of subject domain units would select appropriate elements for integration in units in their own subject domain. The main advantage of this model is that the essential skills would be developed within one or more relevant contexts. This would help promote the transferability of the essential skills.

The 'combination model' combines features of the 'adjunct' and 'integrated' models. Instead of large units being developed for each of the essential skills, they would be broken down into smaller units. Thus several units may be required to cover all components of an essential skill. These smaller units could then be linked to domain-specific units to provide a context. Domain specific units would specify certain essential skill units as co-requisites. This model also allows for the development of essential skills within more than one context.

Comparing the lists of generic skills

In mapping the Australian key competencies against overseas lists of generic skills including those of New Zealand (table 1), the Mayer committee (1992a, p.15) found that each Australian key competency was duplicated in the New Zealand essential skills and vice versa. Similarly, Kearns et al. (1993, p.31), in a comparative study of the Australian and New Zealand Vocational Education and Training Systems, mapped the Australian key competencies against the New Zealand essential skills and came up with a result identical to that of the Mayer committee with one exception, namely, that:

Only 'using technology' from the Mayer committee list has no counterpart in the New Zealand essential skills list.

(Kearns et al., 1993, p.30)

This latter viewpoint was also the finding of the NZQA (1993, p.10). Neither gave reasons for this view, however, from the Mayer committee's description of 'using technology' it is clear that this key competency would be only partly covered by the New Zealand essential skills 'information skills' and 'communication skills'.

After these comparisons were made, an eighth essential skill, physical skills, was added, this skill having no equivalent in the list of Australian key competencies. The essential skill physical skills would have been covered by the Australian key competencies had the Mayer committee included the competencies 'motor skills/dexterity' and 'health/physical fitness' as suggested through the Preliminary Industry Validation study.

ENGLAND AND WALES**Development
of the core
skills**

The Secretary of State for Education (the Rt Hon Kenneth Baker) in a speech dated February 1989, outlined the merits of incorporating core skills across the curriculum:

We want to equip young people with the knowledge and skills so that they have greater chances. In the changing employment world they will need broadly based qualifications. . . . As I see it, there are a number of skills . . . which young people and adults in future will all need. They could be expressed as a list of core skills . . .

(Baker 1989)

A tentative listing of core skills was produced in November 1989 by the Confederation of British Industry (CBI, 1989):

- values and integrity
- effective communication
- applications of numeracy
- applications of technology
- understanding of the world of work and the world
- personal and interpersonal skills
- problem-solving
- positive attitude to change.

Table 1

AUSTRALIA key competencies	UK (NCVQ) core skills	US (SCANS) workplace know-how	NZ essential skills
Collecting, analysing and organising information	Communication	- Information - Foundation skills: basic skills	Information skills
Communicating ideas and information	- Communication - Personal skills: Improving own learning and performance	- Information - Foundation skills: Basic skills	Communication skills
Planning and organising Activities	Personal skills: Improving own learning and performance	- Resources - Foundation skills: Personal qualities	- Self-management skills - Work and study skills
Working with others and in teams	Personal skills: Working with others	Interpersonal skills	- Social skills - Work and study skills
Using mathematical ideas and techniques	Numeracy: Application of number	Foundation skills: Basic skills	Numeracy skills
Solving problems	Problem solving	Foundation skills	Problem-solving and decision-making skills
Using technology	Information technology	- Technology - Systems	- Information skills - Communication skills
	Modern foreign language		

Note: Where the UK core skills, US workplace know-how and NZ essential skills are comparable with more than one key competency they have been repeated.

Source: Mayer (1992a, p.15)

A revised list of core skills was proposed by the National Curriculum Council (NCC) in March 1990 in response to the Secretary of State Education's request to find which core skills could be defined and incorporated into the study programmes of 16-19 year-olds taking A/AS courses. This list was endorsed in

April 1990 by the National Council of Vocational Qualifications and comprised:

- communication
- problem-solving
- personal skills
- numeracy
- information technology
- competence in a modern language.

(Jessup 1990)

It is interesting to note that although industry recommended the adoption of values, integrity and a positive attitude to change as core skills, this was not heeded by the National Curriculum Council (NCC), NCVQ or the Schools Examinations and Assessment Council (SEAC) in their lists of proposed core skills. This development virtually mirrors that in Australia whereby the Mayer committee excluded values and attitudes from the list of key competencies despite industry arguing strongly for their inclusion.

In developing the core skills, the NCVQ proposed that only the communication, problem-solving and personal skills core skills would be relevant to all the National Vocational Qualifications (NVQs) (these qualifications being vocationally specific) whilst the core skills numeracy, information technology and competence in a modern language would only be relevant to particular NVQs where necessary for occupational competence. Thus, unlike in Australia where the key competencies, by definition, apply to work generally, the core skills may be occupation specific.

The SEAC and NCVQ, in consultation with a number of other educational bodies and selected lead bodies (in business administration, caring, engineering and construction), further developed each core skill, except competence in a modern language. The resulting core skill units have been designed to be integrated into the pre-existing NVQs and general NVQs—there are no separate stand-alone 'core' NVQs.

Each of the core skills was described at four levels of performance (compared with three levels of attainment proposed by the Australian Mayer committee). They were then further specified in more detailed units at each performance level. A total of twenty four core skill units were developed.

Transferability

The approach to transferability in the development of the core skills differs to that adopted with the development of the New Zealand essential skills.

Although the development of skills that underpin performance in a wide range of situations was of fundamental significance in constructing the core skills, the developers were well aware of the problems related to transferability:

Teaching the basic skills abstracted from the contexts in which they are applied does not always prepare young people to practise them in the real world. Developing them in context does not always lead to individuals being able to transfer them to new and different contexts.

(Oates 1991, p.2)

Some broad assumptions have been put forward including:

At a common sense level most people would probably accept that communication and numeracy are likely to be generalisable to different contexts. Problem solving, however, has not always been viewed as a set of common skills and processes that are generalisable.

(Oates 1991, p.5)

Using communication as an example, it was explained that transfer of communication skills to a new context does not mean that proficiency in the new context would occur immediately, rather, that those possessing core communication skills would be able to put into practice and become proficient in communication skills in the new context more rapidly than those not in possession of the core communication skills.

SCOTLAND

Five core skills have been identified in Scotland and are virtually identical to the list of core skills identified in England and Wales, except that competency in a modern foreign language was not included:

- communication
- personal and interpersonal
- problem solving
- numeracy, and
- information technology.

(Scottish Office Education Department 1991)

The core skills were defined as 'those abilities which are fundamental in a wide range of life roles and particularly in employment' and have three levels of attainment within the Scottish Vocational Qualifications (SVQs) administered by the Scottish Vocational Education Council.

UNITED STATES

As part of President Bush's 'America 2000 Education Strategy' formed in 1990 to 'close the skills and knowledge gap' of Americans, the Secretary's Commission on Achieving Necessary Skills (SCANS) was set up by the United States Department of Labor to specifically advise the Secretary on the level of skills required to enter employment. This was prompted by findings such as:

... more than half of our young people leave school without the knowledge or foundation required to find and hold a good job.

(SCANS 1991, p.v)

In order to identify the skills required across industries and in the new patterns of work found in 'high performance' organisations, SCANS established six special panels to examine jobs ranging from manufacturing to government. Researchers were also commissioned to conduct interviews with workers in a wide range of jobs.

After twelve months of work, SCANS had identified a set of eight competencies and skills shared by all workers which they labelled 'workplace know-how'.

Workplace know-how comprises of five competencies and a three-part foundation that 'lie at the heart of job-performance'. The three part foundation of intellectual skills and personal qualities are part of each of the five competencies. Therefore, competence must be first attained in the foundation before competence can be achieved in any of the five competencies. The three part foundation skills are:

- Basic Skills
- Thinking Skills
- Personal Qualities

and the five competencies are:

- Resources
- Interpersonal
- Information
- Systems
- Technology.

(SCANS 1991, pp.xvii-xviii)

These eight requirements were considered essential preparation for all students either going directly into the workforce or continuing with further education thus making them similar, by definition, to the Mayer committee's key competencies which were defined to be '... not only essential for effective participation in work but are also essential for effective participation in further education ...' (Mayer 1992a, p.7)

The integrated nature of these eight competencies was also emphasised:

Seldom does one of these eight components stand alone in job performance. They are highly integrated and most tasks require workers to draw on several of them simultaneously.

(SCANS 1991, p.vi)

It is intended that the competencies will be incorporated into existing school subjects. Further, they are not intended for any specific educational stream, for example 'general' or 'vocational' education, rather, all teachers in all disciplines will be expected to incorporate them into their classwork.

Although SCANS saw the identified competencies as applying '... from the shop floor to the executive suite', they believed:

... after examining the findings of cognitive science, that the most effective way of learning skills is 'in context', placing learning objectives within a real environment rather than insisting that students first learn in the abstract what they will be expected to apply.

(SCANS, 1991, p.xv)

This suggests that SCANS, unlike the Mayer committee in Australia, does not require the workplace know-how skills to be transferable.

Instead of specifying competencies at various numeric levels of achievement as has been the case in many countries including Australia and England, SCANS has proposed five levels of proficiency as follows: preparatory; work-ready; intermediate; advanced; and specialist (SCANS 1991, p.25). SCANS also stated that proficiency in each competence requires proficiency in the foundation. This is similar to the Mayer committee's key competencies assuming a 'foundation of knowledge, skills and understanding' (Mayer 1992d, p.11).

At the release of its *What work requires of schools* report, SCANS was considering the major issues involved in creating an assessment system for the foundation and the competencies. However, the assessment process will not ultimately be developed by SCANS.

CANADA

Canada first began to focus on the concept of key competencies when the Steering Group on Prosperity (n.d.) identified that:

- too many young people are still not ready for school and too many are leaving school ill-equipped for work, and
- too many adults are permanently sidelined by a lack of skills.

Within the strategy for prosperity, the following goals were set to overcome the above deficiencies:

- reorient our educational systems so that they focus on results
- improve the performance and accessibility of our learning systems so that more Canadians have the chance to acquire necessary skills and knowledge
- strengthen the links between schools and the workplace so that students are better equipped to enter the world of work.

Included in a number of key recommendations was the development of a competence-based education and training system where success is defined by measurable skills. As for key competencies:

There is growing interest in defining our expectations for our learning systems and in defining key skills and competencies we expect people to have acquired at various stages of their education and training.

(Steering Group on Prosperity, n.d., p.36)

One of the earlier educational bodies in Canada to introduce a skills based approach to education was the Georges Vanier Secondary School in Ontario in 1988. Staff of the school consulted with representatives from business, industry, labour and post-secondary institutions as well as parents and students to identify specific skills students should acquire before graduating. The areas identified were:

- problem solving skills
- communication skills
- personal skills, and
- application skills (computers, technology and telecommunications).

This list is almost identical to the list of core skills identified in the United Kingdom.

GERMANY

Due to changing demands being made on skilled workers in Germany because of new technologies and manufacturing processes, the German Federal Ministry of Education and Science sponsored a pilot project conducted by Siemens Aktiengesellschaft to develop *Project and Transfer oriented Training (PETRA)*.

As part of PETRA, a number of 'core skills' were identified, these skills being defined as those skills required by specialists over and above technical ones. The core skills along with examples of essential individual qualities are:

- 1 Organising and carrying out the practice task;
- 2 Communication and co-operation;
- 3 Application of learning techniques and interrelated thought processes associated with the work in question;
- 4 Independence and responsibility;
- 5 Ability to work under stress.

(Siemens 1990)

Unlike the New Zealand essential skills and the Australian key competencies where transferability is principally an implicit requirement or desired outcome, transfer is to be taught explicitly as part of the PETRA core skills, particularly in relation to the core skill 'application of learning techniques and interrelated thought processes'. This explicit teaching of transfer, called 'transfer-orientation', is designed to:

. . . teach trainees to apply what they have learned to different and new situations and to fall back on what earlier experience has taught them.

(Siemens 1990)

It is not clear as to whether or not 'new situations' implies transfer of knowledge and skills across contexts or only within contexts.

Another main focus of PETRA is to train students to self-regulate their learning.

Both the Australian definition of key competencies and the New Zealand definition of essential skills refer to either 'the needs of contemporary society' or 'emerging patterns of work', indicating that both the key competencies and essential skills were developed to address the requirements of changing work environments and for effective participation in modern society. Key competencies being essential for effective participation in work, further education and in adult life more generally may be taken as the equivalent of essential skills being required for an individual to 'function effectively as a full member of New Zealand's society and economy'.

Knowledge is treated differently in the definitions. For the New Zealand essential skills, the emphasis is on skills 'as distinct from knowledge or understanding' (NZQA 1993b, p.6), whereas the Australian key competencies must 'involve integration and application of knowledge and skills' (Mayer 1992b, p.8). The New Zealand position highlights the emphasis on developing usable skills rather than knowledge alone. Nevertheless, the importance of possessing relevant knowledge for the successful development of essential skills is still recognised.

One point in common is that the Australian key competencies and the New Zealand essential skills may be considered equivalently 'generic'. 'Generic' with respect to key competencies referred to skills applying to work generally rather than specific work, whilst essential skills 'traverse a range of situations or occupations'.

Transferability is one of the areas least clearly discussed with respect to both the key competencies and essential skills. Although the Mayer committee, through its definition of competence, required the key competencies to be transferable to 'new tasks and situations', it is unclear as to whether or not they must be transferable across contexts or domains. With respect to essential skills, it is not clear as to whether transferability is a definitional requirement of an essential skill, or purely a desired outcome of the teaching of these skills. Care must be taken in formulating policies and strategies which assume the key competencies or essential skills to be transferable, as growing research shows that few skills transfer readily from one context to another.

With respect to the specific lists of skills, there are only seven key competencies compared with eight essential skills. Each key competency is covered by the essential skills and vice versa with two exceptions, namely, the key competency *Using technology* has been identified as having no equivalent in the list of essential skills,

and the essential skill *Physical skills* has no equivalent in the key competencies.

Each of the Australian key competencies was described at three performance levels, these levels not being linked to the pre-existing Australian Standards Framework. On the other hand, it has been proposed that the New Zealand essential skills be linked to the National Qualifications Framework which consists of eight levels. However, all the essential skills would not be represented at the same number of levels, some may be represented only at the first level whilst others may be represented in all eight levels.

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